

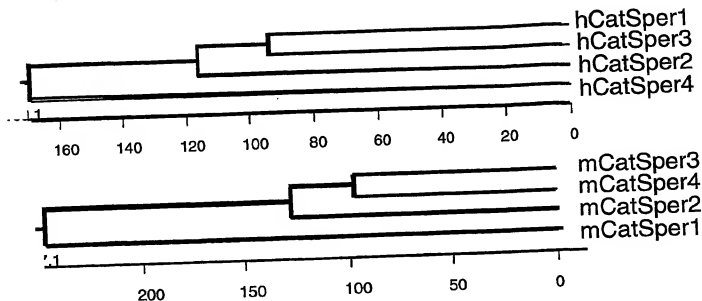
FIGURE 1

MSQHFFHNPV RVKSGSLFAT ASEALQARLS KIKRKDKCEQ AYFRKVIKST	0050
<u>FFQIVMITTV TTNSFLVLG TNYDIQFEFF RTEFVSELEF VSVYYCEELM</u>	0100
<u>KVYVDPITYW KDGYNLDDVI ILILTPYL LRKIKGNHSA YLHFADGIQS</u>	0150
<u>LRILKLISYS RGIRTLIAV GETVYTVASV LTLLELLMFV FAILGFCLEG</u>	0200
<u>VTDRGDLENW GNLASAFFTL FSLATVDGWT DLOEELDKRK FTVSRAFTIL</u>	0250
<u>FILLASFIPL NMFVGVMMIMH TEDSMKKFER DLTLENLAI MEEKQILKR</u>	0300
<u>QQEEVNRLMN TQKTGSMNFI DMVEGFKKTL RHTDPMVLDD FSTLSFIDI</u>	0350
YLVTLDNQDV IVSKLQELYC EIVNVLSLML EDMPKESSSS LSGLS	0395

FIGURE 2

MSQHRHQRHS RVISSPVDT TSVGFCPTFK KFKRNDDECR AFVKRVIMSR	0050
<u>FFKIMISTV TSNAFFMALW TSYDIRYRLF RLLEFSEIFF VSICTSELSM</u>	0100
<u>KVYVDPINYW KNGYNLLDVI IIVMFLPYA LROLMGKQFT YLYIADGMQS</u>	0150
<u>LRILKLIGYS QGIRTLITAV GOTVYTVASV LLLLELLMYT FAILGFCLEG</u>	0200
<u>SPDNGDHDNW GNLAFAFFTL FSLATVDGWT DLOKQLDNRE FALSRAFTII</u>	0250
<u>FILLASFIPL NMFVGVMMIMH TEDSIRKFER ELMLEQQEML MGEKQVILQR</u>	0300
<u>QQEEISRLMH IQKNADCTSF SELVENFKKT LSHTDPMVLD DRGTSLPFID</u>	0350
ITYFTLDYQD TTVHKLQELY YEIVHVLSLM LEDLPQEKQP SLEKVDEK	0398

FIGURE 3



hCatSper3 and hCatSper1 are 21% identical  
 hCatSper3 and hCatSper2 are 22% identical  
 hCatSper4 and hCatSper1 are 17% identical  
 hCatSper4 and hCatSper2 are 21% identical

mCatSper3 and mCatSper1 are 20% identical  
 mCatSper3 and mCatSper2 are 22% identical  
 mCatSper4 and mCatSper1 are 22% identical  
 mCatSper4 and mCatSper2 are 22% identical

hCatSper1 and mCatSper1 are 48% identical  
 hCatSper2 and mCatSper2 are 71% identical  
 hCatSper3 and mCatSper3 are 68% identical  
 hCatSper4 and mCatSper4 are 65% identical

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SEQ ID NO: 1 (Human CatSper4 cDNA)

ATGTCTCAAC ACCGTCACCA GCGCCACTCG AGAGTCATTT CTAGTTCACC	0050
AGTTGACACT ACATCGGGTGG GATTTTGCCC AACATTCGAAG AAATTTAAGA	0100
GGAAACGATGA TGAATTGTCGG GCATTTGTGA AGAGAGTCAT AATGAGCCCT	0150
TCTTTTAAGA TAATTATGAT TAGCACTGTC ACATCGAATG CGTTTTTTAT	0200
GGCCTTGTTGG ACCAGTTATG ACATAAGGTA CCGCTTGTTT AGACTTCTTG	0250
AGTTCTCGGA GATCTTCTTT GTGTCCATCT GCACATCTGA GTTGTCATG	0300
AAGGTCTATG TGGACCCCAT CAACTACTGG AAGAACGGCT ACAACCTGCT	0350
GGATGTGATC ATTATCATCG TTATGTTTTT ACCCTATGCC CTCGCCACGC	0400
TCTTGGGCAA ACAGITTCAT TACCTGTATA TCCTGATGG CATCAGCTCC	0450
CTGCGCATCC TCAAGCTTAT CGGCTATAGC CAGGGCATCC GGACGGTGAT	0500
CACCGCCGTG GGGCAGACAG TCTACACCGT GGCCTCTGTG CTCCTCTGTC	0550
TCTTCTCTCT CATGTACATC TTCGCTATCT TGGGCTTCTG CCGTGTGGA	0600
TCCTCAGACA ATGGTGACCA TGATAACTGG GGGAACTGG CTCGAGCTTT	0650
TTTCAACCCTC TTCAGCTTGG CCACGGTTGA TGCTTGGACA GACCTGCAGA	0700
AGCAGTTGGA CAATCGGGAA TTTGCTTTGA GCGCGGCATT CACCATCATC	0750
TTCATCTTGC TCGCCTCTTT CATCTTCTC AACATGTTTC TGGGTGTGAT	0800
GATCATGAC ACAGAGGACT CCATCAGAAA GTTTAGCGCA GAGCTGATGT	0850
TCTGAGCAGA GGAGATGCTC ATGGGAGAGA AGCAGGTGAT TCTGCAGCGG	0900
CAGCAGAGTG AGATCAGCAG GCTGATGCAC ATACAGAAAA ATGCTGACTG	0950
CACAAGTTGG AGTGAGCTGG TGGAGAACTT TAAGAAGACC TTGAGCCACA	1000
CTGACCAATT GGTCTTGGAT GATTTTGCCA CTAGCTTACC CTTCATCAT	1050
ATCTACTTTT CCCTCTGGA CTACCAGGAC ACAACTGTCC ACAAGTTCA	1100
ATGAGCTGAC TATGAGATCG TGCATGTGCT GAGCCTAATG CTGGAAGACT	1150
TGCCCCAGGA GAAGCCCCAG TCCTTGGAAA AGGTGGATGA GAAGTAG	1197

SEQ ID NO: 2 (Human CatSper4 Protein Sequence)

MSQHRHQHRES RVISSPVDV TSVGFCTPFK KFRKRNDDCE AFVKRVMRS	0050
FFKIMRHSTV TSNAFFMALW TSYDIRYRLF RLLEFSEIFF VSICITSELM	0100
KVYVDPINYW KNGYNLLDVI IIIVMFLPYA LRQLMGKQFT YLYIADGMQS	0150
LRILKLIGYS QGIRLTIV GQTVYTVASV LLLFLLMYI FAILGFCLFG	0200
SPDNKGHDNW GNLAFAFFIL FSLATVDGWT DLQKQLDNRE FALSRAFTII	0250
FILLASFIJL NMFVGVMMIH TEDSIRKFER ELMLEQQEML MGEKQVILQR	0300
QQEISRLMH IQKNADCTSF SELVENFKKT LSHTPMVLVD DFGTSLPFID	0350
IYFSTLDYQD TTVHKLQELY YEIVHVLSLM LEDLPQEKPO SLEKPVDEK	0398

SEQ ID NO: 3 (Murine CatSper4 cDNA)

ATGTCCCAAC ATTTTCACCA CAACCTGTGA CGAGTCAAGT CGGGCTCACT	0050
GTGTTGTACA GCATCGGAAG CATTGCGAGC AAGACTGAGC AAGATTAAGA	0100
GGAAAGGTAA GGAGTGCCAG GCTTACTTCA GGAAGGTTAT TAAGAGCACT	0150
TCTTCCAGA TTGTGATGAT CACCACGGTC ACCACCAACT CCTTTTACT	0200
GGTCTTGGGG ACTAATTATG ACATACAATT CGAGTTTTC AGAACCTTTG	0250
AGGTCTCAGA GCTTTTCTTT GTATCTGTCT ATGTCTGCGA GTTCTCATG	0300
AAGGTCTATG TGGACCCCAT TACATACTGG AAGGATGGCT ATAACATCT	0350
GGATGTGATC ATTCTCATCA TTCTCAACAT ACCCTATCTC CTCGCCAAAA	0400
TCAAGGGGAA TCAATTCTGA TACCTCCACT TTGCTGATGG CATCACTGCT	0450
CTAGCAATCC TCAAGCTTAT CTCTACAGT AGGGGCATCA GGACACTGCT	0500
CATCGTGTG GGGGAGACGG TCTACACTGT GGCCTCGGTG CTGACGCTGC	0550
TCTTCTCTCT CATGTTTGTG TTGCGCATCC TGGGATTCTG CCTATTGGC	0600
GTGACGGGCA GAGGCGACCT GGAGAACTGG GGGAACTGG CTTCAGCTTT	0650
AAGAGCTGGA CAAGAGGAAG TTTACTGTGA GCGGGCGGCT GACCTGCAGG	0700
TTCATCTTGC TTGCATCCTT CATCTTCTC AACATGTTTG TGGGTGTGAT	0750
GATCATGCAC ACGGAGGATT CCATGAAAAA GTTTAGCGCG GATCTGACGT	0850
TGGAGAGGAA CCTTGGGATT ATGGAGGAGA AGCAAAATAA CTGGAACGC	0900
CAGCAAGAGG AGGTCAACAG GCTGATGAAC ACACAGAAAA CTGGTAGCAT	0950
GAACITCATT GATATGGTGG AGGGCTTCAA GAAGACCCTG CGGCACACAG	1000
ACCCCATGGT TCTGGATGAC TTCAGCACTA GTCTCTCTT CATTGATATC	1050
TACTTGGTCA CACTGGACAA CCAAGATGTT ATTGTGACA AGCTTCAGGA	1100

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GCTCTACTGT GAGATTGTGA ACGTGCTGAG CCTGATGTTG GAAGACATGC 1150  
 CCAAGGAGAG CTCGTCCAGC CTCGCGGAC TAAGTTAA 1188

SEQ ID NO: 4 (Murine CatSper4 Protein Sequence)

MSQHFHHNPV RVKSGSLFAT ASEALQARLS KIKRKDKBCQ AYFRKVIKST 0050  
 FFQIVMITTV TNSFLVLG TNYDIQFEFF RTEFVSELFV VSVYYCEFLM 0100  
 KYVVDPTIYW KDGYNILDVI ILILITPYL LRKIKGNHSA YLHFADGIQS 0150  
 LRILKLISYS RGRILTHAV GETVYTVASV LTLFLMLFV FAILGFCLFG 0200  
 VTDRGDLNENW GNLSAFFTL FSLATVDGWT DLQEBELDKRK FTVSRFAFTL 0250  
 FILLASFIFL NMFVGVMMIMH TEDSMKKFER DLTLERLNLA MEEKQILKR 0300  
 QQEHEVNRLMN TQKTGSMNFI DMVEGPKKTL RHTDPMVLDD FSTSLSFIDI 0350  
 YLVTLDNQDV IVSKLQELYC EIVNVLML EMDPKESSSS LSGLS 0395

SEQ ID NO: 5 (hCatSper4 5' flanking sequence containing basal promoter region)

ACAGGCATGA GCCACCGCGC TTGGCCAGAA GTGGCATTCT TAAATTCAGG 0050  
 AATTTGGGAT GGGGAGTATT CACACATTTT ATAACCCAGA AATTCAGGCA 0100  
 ATTCTGGTGA CTACAAATGC ATTGTTTGG AGAATAGTTG TAAGGTGGAA 0150  
 AAAGAATTAG GAACCTCGACA GATAGTGAGT TTAACCTTTA AATAACAATT 0200  
 CTTCCTTTGT TTTGTTTGTG TTGAGACGGG GTCTCGCTCT GCTGCCAGG 0250  
 CTGGAGTGCA GTGGCAGGAT CACGGTTTAT TGCAGCCTTA ACTCTCTGGG 0300  
 CTCGAAGCAGT TCTCCCTCCT CAGCTCCAG AGTAGCTGGG ACTATAGGCA 0350  
 AGTGCCCAACA CGCCTGACTA ATTTTAAAT TTTTGTAGA GATGGGTCT 0400  
 CCCATCTTGC CCAGGCTGGC CTGAACCTCT TGGGCTCAAG CAAGCTCCCT 0450  
 ACCTCTGCCT CCCAAAGTCC AAGGATTACA GGTGTGAGCC ATTGCCCCCA 0500  
 GCCAGTATAA CAGTTTGTGT GTGTGTGTGT GTGTGTGTGT GTGTGTGTGT 0550  
 GTTTGACACG GGGTCTCATT CTGTGCCCC GGCAGTAGTG TAGTGGTGGG 0600  
 ACCATGGCTC ACTGTAGTCT TGACTTCTCA GGCTCAAGTG ATCCTCTCAC 0650  
 CTCAGCTCCG TGAGTAGCAG CGGTTACAGG CATGCATCAC CACACCTGGG 0700  
 TTATTTTAA AACTTTGTG TGGAGACAGG GTCTTACTAT GTTGCCATGG 0750  
 CTGGTCTAGA ACTTCTGGGC TCGAGTAATC CTCTGCTCT GGCTCTCAA 0800  
 AATGTGGGA TTACAGGTGT GAGCCACTGT GTCATAACAA TTAITTTAAA 0850  
 ATTTTATTT ATTTATTTT AATAATTATA CAAGATGGAG TCTCATATG 0900  
 TTGCCACGGC TGGTCTTGAA TGCTGGGCT CAAATGATCT TCCTGCCCTG 0950  
 ACCCCAGGCG GTGCTGGAT TACAGCGGTG AGCCACTGCG CCTGGCCTAT 1000  
 AACAATTTCT ATGAAGCTAA AGTTGATTG GATTITAGCT GCCGTACTA 1050  
 CTTATATAAT TAATTAGATT AAACAAGTCA CAAAATTTGG ATGAGCTATC 1100  
 TTGGTGTGTT TTCTTTACTT TTCTCTTCA ACAGAGAGTT GAAGGAGAGG 1150  
 ACAAGTGTCT TGTCTGTGGC TTCCAGGAAT GTGTGGCAAT ATAAGATTTA 1200  
 CTGTTACAGC AGCCAACTCA CCAAGTCATT ATTGTACTTA CTGAGTTAAG 1250  
 GAGGAACATA GGGTCAATTT CCCCCATCA TTGTCATGTT TTGACTCTGT 1300  
 AACTGAGGGT CTACGGCCAC TGAAGCTAGA AGCTAGAAAG GTGTAAATCA 1350  
 GTAGTGAGCT CTACTTACTC CATGTGTAC TGACAGATGT AAAAAGGAAT 1400  
 ATCAAGTAAT CTATTATTT AAAATTGTAA TAAGAGTGT TTTTGAAGGA 1450  
 ATTCAAGGAAT GTACTACTAA CGAGATTATG ATGCAGGTAT ATCCATCAT 1500  
 GAAGCATTTG TTAGTCCCTT GAAGCATCAT GGTAGTGGAA TTTAACATGG 1550  
 ATCATCTTTG TAAACCCACC TCTCTTTAGG GGCCAGAGAA ATCACTGTT 1600  
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 CTGGCTGCTG TTTGCTGGCC AGGGAGAGGC AGGTGTGCTC AGTTGCCCTG 1750  
 TGGACATGTG GTGTGCGAGG AGAGAAGAGG GAAAGAGCC ACTCAGGCTC 1800  
 TCTGGCTGCC AGGGGATCCA GACTCTTAGC ACTAGAAGCT CTGTGTTCTA 1850  
 GAATTTCTCC CAAGGAAAAA ACAAACCTGT GTTTTATAA GCTGTTTCTC 1900  
 TATAGTGTAG ATTTGGGACT TTTATACATT TTAITACCAA ATATTTTAA 1950  
 TTAAGTGCTT CAATTTTCAA CATTAATTCT TTAATAATTT CTITGTAGAA 2000  
 TCATCAACCTG GATTTTACATG AATTTTATA GCATGAAAAA ATTTAAACAT 2050  
 ATTCAAAAGT ACATGAATAG TACATTGAAG CCTTATATAC ATATACACCA 2100  
 GATATAAAAA TTACCAAGAT TTTGTCCAG TTGCTTCATT TTCCCTGTTT 2150  
 CCTCTTTTGC TAAAGTAATT AAAAGCAAA CCAAGATAGC TTATCATTTT 2200  
 ACCCCTATAT CTTTCAGTAA GTTCTATAGG AAAATATGGC CATTTTCTG 2250  
 TATAAACCAAC AGTACCTCTG TTTTTTTTT TTGAGATAGA GTCTCACACT 2300  
 GTGCCCCAGG CTGGAGTGCA ATGGGCTGAT CTGGCTCAC TGCAACCTCT 2350

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GCGCTCCAGG TTCAGGCGAT TCTCCTGCCT CAGCCCCCGG GGTAGCTGGG 2400  
 ATTACAGGTG TGGGCCACCA TGCCACGCTA TTTTITTTTT GTATCTTCAG 2450  
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 CCACAGCGCC CGGCCACAG TACCATTTTT ATACCTAACA AAGTGATTCC 2600  
 TTGGTACACT TAATACCTAG GCAAAATCAA ATTGCTCTGA AGGTCAATGAA 2650  
 TGTCTTGA CAAGTAATCTG GTTCTAATCG AGGATCTATA TGAAGCCACG 2700  
 CAATCGCATC TGGTGTGTGT GTCTCTTTAG TCTGTCACTC TGGAGCAAGC 2750  
 TCCCCTCCCT TCTCAGTTC CCCATGTTAT TTATTTATTG TAAAACTCG 2800  
 GTCAGTTGTG CTGTAGAATA TTCTGCTTTC TGGATTGTT TTGTTCTTCC 2850  
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 TGGTGGTAAA TTCCAACAGA ATGAAACACC AAACTTGCTT AAAGTAACTC 3200  
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 GCTTTGGCTT TCTTCTGTT TCTTTCTAAA AGATCACTGG AGTAGAGAGG 3350  
 AGTTAAACAG ACATGACCTT TGACCTCTTG CATGACCTCC ACAGATAGCA 3400  
 AACCAGGCGC ACACATGGTT GACGATGTCC TTTTCTACAA TGAAGTTAAT 3450  
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 GAGCTGTCTG TGAAGGGGCA CAGGAGATGG CCGTTGGCT TCTCATCCCA 3950  
 GGATGCTGTC CTTGCCAC AACCTCATAG AAGATATGTA TGATTTCAGT 4000  
 AGGCCCTGGA TCAGCTTGT ACCTCTGTTT TCTGTGTTGC TTTCACCTA 4050  
 CTCAGCTGGA GTTTCATTTC CAGACTAAAG TCTTCATCAT TGGCTTCAGA 4100  
 AACAGCATTC ATCTGTGGCT GTGCTGATGT AGTACACCAA GAACAACCTG 4150  
 GCTCTTCTCT GTCACTTTCA GTGGGCTACC TTCCCTCACC TCTCAAGCA 4200  
 GCATGAAAGA ATTCTTTACA TTTTAACTCT CTTTTTGT TTTCCTGAA 4250  
 AGTATGCTTT GGTGCTTAAA GAGAGAAGTC ACAAAGTAT ACTACTGAGT 4300  
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 AGGCCCTGT GGTGGATGT TGGGCAGGAG CCCTGAGACG TTAGGGGCAT 4550  
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 ACAGGGCTAC CCGATGCCCA CTGCTCTGAT TTGCCCTGAA AGCCAAAGGA 4950  
 GTTAGGAGAA GGTGAGTGGG GAGAATATAT TAATCTGAG AGTTGAACAG 5000  
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 TGCTGTCAGT TAGCCAACCT AGGGTTTATA TTGCTCCTT TCTTTTTTTC 5150  
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 GAGTGCAAGT GTGTGATCAC AGCTCATGT AACCTCCAAC GCGTGGACTA 5250  
 AAGTGATCCT CCTACCTGG CCTCTCTGAT AGCTGGGACT ACAGGTGATC 5300  
 GCCACCAC CCACCTAAT TTTTATTTT TTTATTTTG TAGAGACAGT 5350  
 CTCACATCT TGCTCAGGCT AGTCTGGAAC TCTGGGCTC AAGTTATCTT 5400

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GCTGCCTCAG CCTCCATGG GTAATTTTAA TTTCCTTTT TTTTTTTTTT 5450  
 GGAGATGGAG TTTCGCTCTT GTCGCCCAGG CTGGAGTGCA ATGGCACGAT 5500  
 CTTGGCTCAC TGCAGTCTCC ACCTCCTGGG TTCAAGTGAT TCTCCATCCT 5550  
 CAGCCTCCTG AGTAGCTGAG ATTACAGGCA ACTGCCACCA TGCGCGGGTA 5600  
 ATTTATGTAT TTTTTTTTAG TAAGAGATGG GGTTCACCA TGTTGGCCAG 5650  
 ACTAGTCTTA AACTCCTGAC CTCAAGCGAC CTGCCTGCCT TGGCCTCCCA 5700  
 AAGTGCTGGG ATTACAGGCA TGAGCCGCTA TGCCTCGTCG CTGATTTTTA 5750  
 TTCTTTATTT TTTTTTTAGA GATGGGGGTC TCACTATGTT GCTCAGGCTG 5800  
 ATCTCAAACCT CCTGGCCTCA AGTGATCCTC CCACCTTAGC CTCCCAAAGT 5850  
 GCTGGGATTA TAAGTGTGAG CCACTATCCC TACCTCACTA TTAACCTTCT 5900  
 TGCTTCTCTT GTTTTCTTTT GTTCTAAGTC AAACCATCA CAATCTTTTC 5950  
 TTGTCTTCC AGGTGTTTTT CAGTGTCTGT CCTGGATGT GCTCTCTTTC 6000  
 TCTTAGAGCC CAGAGAACTT GCTTTTCCCC CTTATATATG ACCCTTAACT 6050  
 TTTTCTAACA CATTATTAAG GGCCTGTGTC TATCAGCTGG GGGCACTTCT 6100  
 TGAAGGGAGG GCCTTTGTGT GGTCTGTTTC TAGTGACTTC CAGCTTTAAC 6150  
 CCAGAGCCTC ATGATTGCTG GGTGCCATA GCCTTTTTCG TGAATGGAGG 6200  
 CACTCAGTCT CCTTGGGAAG AGAGAATCCA TGATAGACCC ACTTGGGAGC 6250  
 TCCCCACTTC AGGGGCCTAC ACACTGGTAA TGCAACAGAA TGCCCCAAGAG 6300  
 TGACCTCATA AAGCAAGGAT TCCCTTCGTG GCCCCTTCTC TGCTGCCTCT 6350  
 CAGAATCC

SEQ ID NO: 6 (hCatSper4 5' UTR Sequence) 0050  
 AGACGCTAAG GAAATCCCT AAGCAGAGAT TTTCGTGTGG ATGCTAAAAG 0078  
 CAAGGAATAA AAGTTGAAAA TTTGGAAA

SEQ ID NO: 7 (hCatSper4 3' UTR Sequence) 0050  
 CTGGGCATGG GGCACCCATG TGCCGAGAGC CTTGCAGACC ATGACAGGTC 0072  
 CCTATTAAAC ACAGGCITTC TG